

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A liquid crystal display device comprising:
a pair of substrates substantially parallel to each other, at least one of the substrates being transparent; and
a liquid crystal layer sandwiched and held between the substrates,
wherein a plurality of pixels each constituted by parts of the respective substrates and a part of the liquid crystal layer sandwiched between the parts of the substrates are arranged in a matrix pattern,
each of the pixels includes first and second electrodes for generating, between the substrates, an electric field in a direction substantially parallel to the substrates and is divided into a plurality of regions,
the regions of each of the pixels are defined by the first and second electrodes,
the direction of an electric field generated in one of the regions is opposite to that of an electric field generated in an adjacent one of the regions, [[and]]
the liquid crystal layer has a structure in which when no electric field is generated, a slow axis indicating a refractive-index anisotropy as viewed in a direction normal to the substrates in each of the regions is vertical or parallel to the direction in which an electric field is to be generated whereas when an electric field is generated, the slow axis rotates about an axis normal to the substrates and slow axes in adjacent ones of the regions rotate in opposite directions,
polarization is present in the liquid crystal layer when no electric field is generated

between the first and second electrodes, and

in the liquid crystal layer, a component of an average polarization direction in a direction parallel to the substrates is orthogonal to the direction in which an electric field is to be generated, when no electric field is generated between the first and second electrodes.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) The device of claim [[2]]1, wherein the polarization in the liquid crystal layer is caused by a flexoelectric effect.

5. (Original) The device of claim 1, wherein the liquid crystal layer contains liquid crystal molecules having a pretilt angle with respect to at least the interface between the liquid crystal layer and one of the substrates.

6. (Original) The device of claim 5, wherein a direction obtained by projecting a pretilt direction of the liquid crystal molecules is orthogonal to the direction of an electric field generated between the first and second electrodes.

7. (Original) The device of claim 5, wherein the pretilt angle of the liquid crystal molecules is defined by one of a rubbing process and a photo-alignment process.

8. (Original) The device of claim 5, wherein the liquid crystal molecules have pretilt angles with respect to both of the interface between the liquid crystal layer and one of the substrates and the interface between the liquid crystal layer and the other substrate, and

directions obtained by projecting pretilt directions of the liquid crystal molecules onto the respective substrates are identical.

9. (Original) The device of claim 1, wherein the first and second electrodes are driven such that potential levels of the respective first and second electrodes alternate with each other.

10. (Original) The device of claim 1, wherein each of the pixels includes a switching element for driving the liquid crystal layer, signal lines and scanning lines, the signal lines and the scanning lines are connected to the switching element and arranged in a lattice pattern, and the first and second electrodes extend in parallel with the signal lines or the scanning lines.

11. (Original) The device of claim 1, wherein the first and second electrodes are alternately arranged.

12. (Original) The device of claim 1, wherein at least part of the periphery of an electrode group composed of the first and second electrodes is constituted by opposed

electrodes connected to a common line.

13. (Original) The device of claim 1, wherein the liquid crystal layer is driven at a frequency that is an even multiple of a frame frequency of a video signal, and

a period in which the liquid crystal layer is driven by a positive electric field is equal to a period in which the liquid crystal layer is driven by a negative electric field.

14. (Original) The device of claim 1, wherein a pulse voltage applied to the liquid crystal layer is set at zero temporarily at every vertical synchronization period of a video signal.

15. (Original) The device of claim 1, wherein a pulse voltage applied to the liquid crystal layer in a vertical synchronization period of a video signal has a polarity opposite to that of a signal voltage applied to the liquid crystal layer in the same vertical synchronization period, at every vertical synchronization period.

16. (Original) The device of claim 1, wherein the liquid crystal layer is in the state of a splay orientation.

17. (Original) The device of claim 1, wherein the liquid crystal layer is in the state of a bend orientation.

18. (Original) The device of claim 1, wherein the liquid crystal layer is in the state

of a hybrid orientation.

19. (Original) The device of claim 1, wherein a dielectric-constant anisotropy of the liquid crystal layer has an absolute value of three or less.

20. (Original) The device of claim 1, wherein a dielectric-constant anisotropy of the liquid crystal layer has an absolute value of one or less.

21. (Original) A method for driving the liquid crystal display device of claim 1, wherein the first and second electrodes are driven such that potential levels of the respective first and second electrodes alternate with each other.

22. (Currently Amended) ~~A method for driving the liquid crystal display device of claim 1~~ A method for driving a liquid crystal display device comprising:

a pair of substrates substantially parallel to each other, at least one of the substrates being transparent; and

a liquid crystal layer sandwiched and held between the substrates,

wherein a plurality of pixels each constituted by parts of the respective substrates and a part of the liquid crystal layer sandwiched between the parts of the substrates are arranged in a matrix pattern,

each of the pixels includes first and second electrodes for generating, between the substrates, an electric field in a direction substantially parallel to the substrates and is divided into a plurality of regions,

the regions of each of the pixels are defined by the first and second electrodes,
the direction of an electric field generated in one of the regions is opposite to that of
an electric field generated in an adjacent one of the regions,
the liquid crystal layer has a structure in which when no electric field is generated, a
slow axis indicating a refractive-index anisotropy as viewed in a direction normal to the
substrates in each of the regions is vertical or parallel to the direction in which an electric
field is to be generated whereas when an electric field is generated, the slow axis rotates
about an axis normal to the substrates and slow axes in adjacent ones of the regions rotate
in opposite directions, wherein

the liquid crystal layer is driven at a frequency that is an even multiple of a frame
frequency of a video signal, and

a period in which the liquid crystal layer is driven by a positive electric field is
equal to a period in which the liquid crystal layer is driven by a negative electric field.

23. (Currently Amended) ~~A method for driving the liquid crystal display device of~~
~~claim 1~~ A method for driving a liquid crystal display device comprising:

a pair of substrates substantially parallel to each other, at least one of the substrates
being transparent; and

a liquid crystal layer sandwiched and held between the substrates,

wherein a plurality of pixels each constituted by parts of the respective substrates
and a part of the liquid crystal layer sandwiched between the parts of the substrates are
arranged in a matrix pattern,

each of the pixels includes first and second electrodes for generating, between the

substrates, an electric field in a direction substantially parallel to the substrates and is divided into a plurality of regions,

the regions of each of the pixels are defined by the first and second electrodes,

the direction of an electric field generated in one of the regions is opposite to that of an electric field generated in an adjacent one of the regions,

the liquid crystal layer has a structure in which when no electric field is generated, a slow axis indicating a refractive-index anisotropy as viewed in a direction normal to the substrates in each of the regions is vertical or parallel to the direction in which an electric field is to be generated whereas when an electric field is generated, the slow axis rotates about an axis normal to the substrates and slow axes in adjacent ones of the regions rotate in opposite directions, wherein

a pulse voltage applied to the liquid crystal layer is set at zero temporarily at every vertical synchronization period of a video signal.

24. (Currently Amended) ~~A method for driving the liquid crystal display device of claim 1~~ A method for driving a liquid crystal display device comprising:

a pair of substrates substantially parallel to each other, at least one of the substrates being transparent; and

a liquid crystal layer sandwiched and held between the substrates,

wherein a plurality of pixels each constituted by parts of the respective substrates and a part of the liquid crystal layer sandwiched between the parts of the substrates are arranged in a matrix pattern,

each of the pixels includes first and second electrodes for generating, between the

substrates, an electric field in a direction substantially parallel to the substrates and is divided into a plurality of regions,

the regions of each of the pixels are defined by the first and second electrodes,

the direction of an electric field generated in one of the regions is opposite to that of an electric field generated in an adjacent one of the regions,

the liquid crystal layer has a structure in which when no electric field is generated, a slow axis indicating a refractive-index anisotropy as viewed in a direction normal to the substrates in each of the regions is vertical or parallel to the direction in which an electric field is to be generated whereas when an electric field is generated, the slow axis rotates about an axis normal to the substrates and slow axes in adjacent ones of the regions rotate in opposite directions, wherein

a pulse voltage applied to the liquid crystal layer in a vertical synchronization period of a video signal has a polarity opposite to that of a signal voltage applied to the liquid crystal layer in the same vertical synchronization period, at every vertical synchronization period.

25. (New) A liquid crystal display device comprising:

a pair of substrates substantially parallel to each other, at least one of the substrates being transparent; and

a liquid crystal layer sandwiched and held between the substrates,

wherein a plurality of pixels each constituted by parts of the respective substrates and a part of the liquid crystal layer sandwiched between the parts of the substrates are arranged in a matrix pattern,

a plurality of scanning lines and a plurality of signal lines are formed in one of the pair of the substrates,

each of the pixels includes first and second electrodes for generating, between the substrates, an electric field in a direction substantially parallel to the substrates and is divided into a plurality of regions,

the regions of each of the pixels are defined by the first and second electrodes,

the direction of an electric field generated in one of the regions is opposite to that of an electric field generated in an adjacent one of the regions,

the liquid crystal layer has a structure in which when no electric field is generated, a slow axis indicating a refractive-index anisotropy as viewed in a direction normal to the substrates in each of the regions is vertical or parallel to the direction in which an electric field is to be generated whereas when an electric field is generated, the slow axis rotates about an axis normal to the substrates and slow axes in adjacent ones of the regions rotate in opposite directions, and

at least part of the second electrodes overlaps with the signal lines when viewed in the direction normal to surfaces of the substrates.